Revision 7/01

CORRES. CONTROL
OUTGOING LTR NO.

DOE ORDER #

04 RF 00263

DIST.	LTR	ENC
BRAILSFORD, M.D		
FERRERA, D.W.		
FERRI, M.S.		
FULTON, J.C.		
GIACOMINI, J.		
HALL, L.		
MARTINEZ, L.A.		
PARKER, A.M.		
POWERS, K.		
SCOTT, G.K.		
SHELTON, D.C.	X	X
SPEARS, M.S.		
TRICE, K.D.		
TUOR, N.R.		
VOORHEIS, G.M.		
C. Dayton	X	X
L. Butler	X	X
Halstrom	X	X
Boylan	X	X
Gibbs	X	X
40M	X	X
COR. CONTROL	X	X
ADMN. RECORD		
WASTE REC. CTR.		
TRAFFIC		
PATS/130		
CLASSIFICATION:		
UCNI		
UNCLASSIFIED		
CONFIDENTIAL		
SECRET		

AUTHORIZED CLASSIFIER SIGNATURE
EXEMPT FROM CLASS
PER CEX-072-99
Date

IN REPLY TO RFP CC NO:
00960RF03

ACTION ITEM STATUS
PARTIAL/OPEN
CLOSED
LTR APPROVALS:

ORIG & TYPIST INITIALS
JAB/se

KAISER•HILL
COMPANY

March 1, 2004

04-RF-00263

Mr. Joseph A. Legare
Director, Rocky Flats Project Office
Rocky Flats Project Management Division
MV72

FOLLOW-UP RE: 00960RF03-WELL 41591 CHROMIUM EXCEEDANCES--RCN-005-04

The attached document concludes the Site's response to concerns raised by the Colorado Department of Public Health and Environment (CDPHE) in their letter of October 7, 2003 (Letter No. 00960RF03), regarding elevated chromium concentrations reported in groundwater samples from monitoring well 41591. This document represents the required response to that letter. A preliminary response was issued in a letter from Kaiser-Hill to U.S. Department of Energy (DOE) dated November 18, 2003 (Letter No. 03-RF-01729).

The Kaiser-Hill Water Programs group has completed its investigation of this issue. The attached document describes our findings. As reported in this document, the elevated metals concentrations in samples of groundwater from this well were confirmed to be the result of sampling methodology, not actual groundwater contamination. These results were informally presented at the February 24, 2004 Water Working Group meeting. Representatives of the CDPHE and U.S. Environmental Protection Agency (EPA attended this meeting and expressed appreciation for the Site's quick response, and concurred with the findings.

If you have any questions regarding these results please contact John Boylan at (x5182) or me (x4663) with any questions.

Robert C. Nininger
Environmental Systems and Stewardship, Environmental Media Management
Kaiser-Hill Company, LLC

JAB/se

Attachment:
As Stated

ADMIN RECORD

SW-A-006073

METALS IN GROUNDWATER FROM WELL 41591: RESULTS OF THE EVALUATION PERFORMED IN 2003

Background

Groundwater samples from monitoring well 41591 have contained concentrations of certain metals, particularly chromium (Cr) and nickel (Ni), that have exceeded RFCA Tier II Action Levels. Thallium (Tl) concentrations have also occasionally exceeded the Tier II Action Level. Subsequent sampling confirmed these elevated concentrations. This well is located on the east boundary of the Rocky Flats Environmental Technology Site (RFETS) (Attachment 1).

The Colorado Department of Public Health and the Environment (CDPHE) expressed concern about these conditions in a letter dated October 7, 2003 (Letter No. 00960RF03). In that letter, the CDPHE speculated that the East Spray Fields (IHSS 216.3) could be a possible source of the chromium concentrations that are detected at well 41591.

An evaluation of groundwater samples from this well and the sampling methods used to obtain those samples was performed by Kaiser-Hill (K-H) Water Programs. The well history and evaluation methods were described in a letter from K-H to DOE dated November 18, 2003 (Letter No. 03-RF-01729). That letter also suggested that the dedicated, stainless steel pump used to collect groundwater samples from this well since the late 1990s could be the cause of the elevated metals concentrations that are reported, and included observations supporting this hypothesis.

This letter presents the results of the evaluation described in Letter No. 03-RF-01729.

Evaluation

An evaluation was designed to test the hypothesis that the elevated metals concentrations reported in groundwater samples from well 41591 were artifacts of the pump used to collect the samples. A detailed description of the collection methods and samples collected during this evaluation was provided in Letter No. 03-RF-01729. Briefly summarizing, a set of samples (one filtered, one unfiltered) for the analysis of metals was collected from the initial purge water using the dedicated pump. The normal, pre-sampling purge was then completed and another set of samples was collected using the pump. Several days later, an unfiltered sample for the analysis of hexavalent chromium (Cr-VI) was collected using the pump. The Cr-VI sample was collected as this form of Cr is toxic. The pump was then removed from the well, the well was redeveloped, and a final set of samples was collected using a teflon bailer. As noted in Letter No. 03-RF-01729, the pump was rusty and initial purge water was turbid with suspended rusty particulates.

Both filtered and unfiltered samples were collected to provide data that might determine whether the reported metals concentrations occurs in the dissolved or particulate phase. The set of purge water samples was collected because this water was in contact with the pump for an extended period, and could therefore be expected to have the highest concentrations of the metals if the pump was the metal source. The second set of samples represents the sample that would normally be collected, plus a filtered version of that sample.

Redevelopment of the well was performed to remove water in contact with the pump, in the well column, and the filter pack that might contain pump-related contaminants. After redevelopment, the well was allowed to stabilize for a period of 12 days before sampling. The stainless steel pump was not reinstalled. The well was then purged and samples were collected using a clean, reusable teflon bailer.

Results

Letter No. 03-RF-01729 presented trend plots of Cr, Ni, and Tl data for groundwater samples collected from well 41591 and several wells in the East Spray Field area. Comparison showed a lack of correlation between groundwater in the East Spray Field area and well 41591.

Attachment 2 includes updated trend plots of Cr, Ni, and Tl in groundwater from well 41591. A listing of these data are provided in Attachment 3. Trend Plot 1 shows concentrations of these analytes in groundwater since sampling of the well was initiated in 1991. Of the samples collected in late 2003 for this evaluation, only the unfiltered sample from the second set described above, plus the filtered sample following redevelopment of the well, are shown on Trend Plot 1.

Trend Plots 2, 3, and 4 present analytical data for samples collected for this evaluation. Included are data from filtered and unfiltered purge water samples, samples collected after purging was completed and after the well was redeveloped. Trend Plot 2 also displays the Cr-VI result, which represents unfiltered purge water collected using the pump.

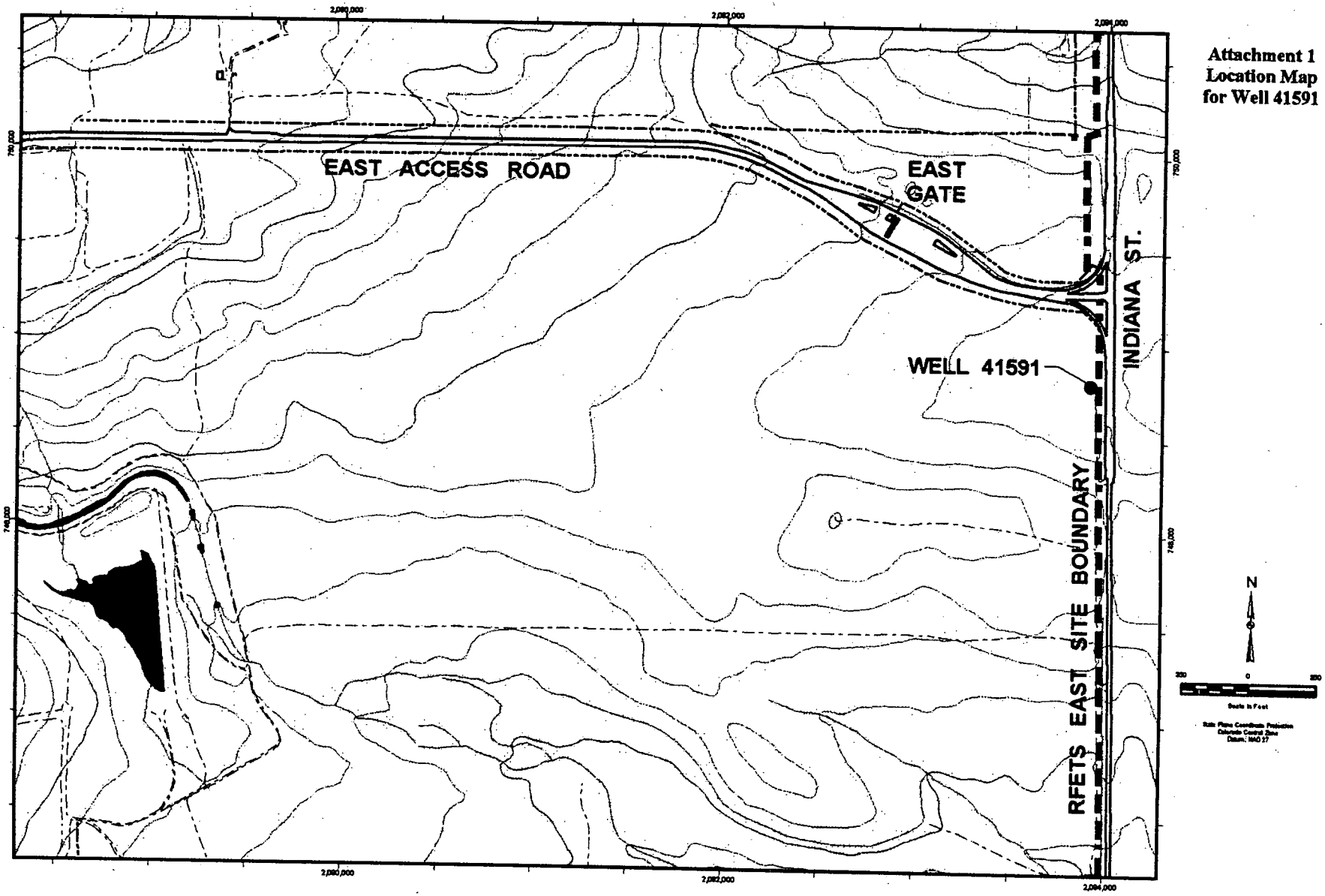
As shown on Trend Plots 2 and 3, removal of the pump and redevelopment of the well decreased the Cr and Ni concentrations below the Tier II Action Levels. Trend Plot 2 shows that the unfiltered purge water samples and water collected after the purge was completed contained higher concentrations of Cr than the corresponding filtered samples. The concentration difference is more than two orders of magnitude for the purge water (6150 ug/L unfiltered vs. 25.7 ug/L filtered), and more than one order of magnitude for the water collected after the purge was complete (70.2 ug/L unfiltered, 5.8 ug/L filtered). These results indicate that most of the Cr is present as a particulate phase, probably within the "rusty" particles that were presumably contributed by the pump. Letter No. 03-RF-01729 provided photographs of the corroded pump and suspended rusty particulates in water. Prior to redevelopment, the concentration of Cr-VI was relatively low (11 ug/L).

Similarly, unfiltered samples contain higher concentrations of Ni (Trend Plot 3) than do filtered samples, but the differences are not as great. Purge water concentrations of Ni were reported as 3740 ug/L and 2700 ug/L for unfiltered and filtered samples, respectively; after the purge was completed, the corresponding Ni concentrations were 458 ug/L and 418 ug/L.

These Cr and Ni data demonstrate the importance of a thorough pre-sampling purge of the well. As indicated in Letter No. 03-RF-01729, concentrations of metals in groundwater samples have been shown in some wells to decrease as the purge volume increases. Increasing the purge volume from well 41591 might have resulted in steadily decreasing metals concentrations in groundwater samples, until a stabilized, representative condition was reached. However, determining such an optimal purge would require well-by-well analyses of multiple samples collected through an overly-long purge process, and would be complicated by pumping conditions and recharge characteristics at the time of sampling. Such a study would not be cost- or time-efficient as the RFETS moves toward final closure.

A decrease in Tl concentrations occurred before the pump was removed and the well was redeveloped, indicating the pump was probably not a cause of the elevated concentrations reported in previous samples. However, the Tl data shown on the trend plots can be misleading, as almost all the data collected from well 41591 since this well was installed are marked with a lab qualifier (Attachment 3). Most often the qualifier is a U, signifying the analyte was not detected at the reported detection limit. Other qualifiers attached to Tl data include B, indicating the concentration was detected below the contract-required detection limit but above the instrument detection limit; N, W, or *, indicating various analytical laboratory quality assurance/quality control tests were not met satisfactorily; or J, indicating the result is estimated. As the trend plots do not display the associated qualifiers, the Tl data and corresponding trend plots must be viewed with care; they may more closely reflect laboratory effects and detection limits than actual groundwater quality. Similarly, the fact that the reported concentrations of Tl in filtered samples are lower than in unfiltered samples may not be meaningful, as these data are similarly qualified.

In summary, the elevated concentrations of metals in groundwater from well 41591 appear to be sourced from the dedicated stainless-steel pump used to collect samples. Future sampling of well 41591 will be accomplished using a bailer, rather than a dedicated pump. K-H will also consider removing similar dedicated stainless steel pumps from other wells that are sampled under the Integrated Monitoring Plan (IMP).



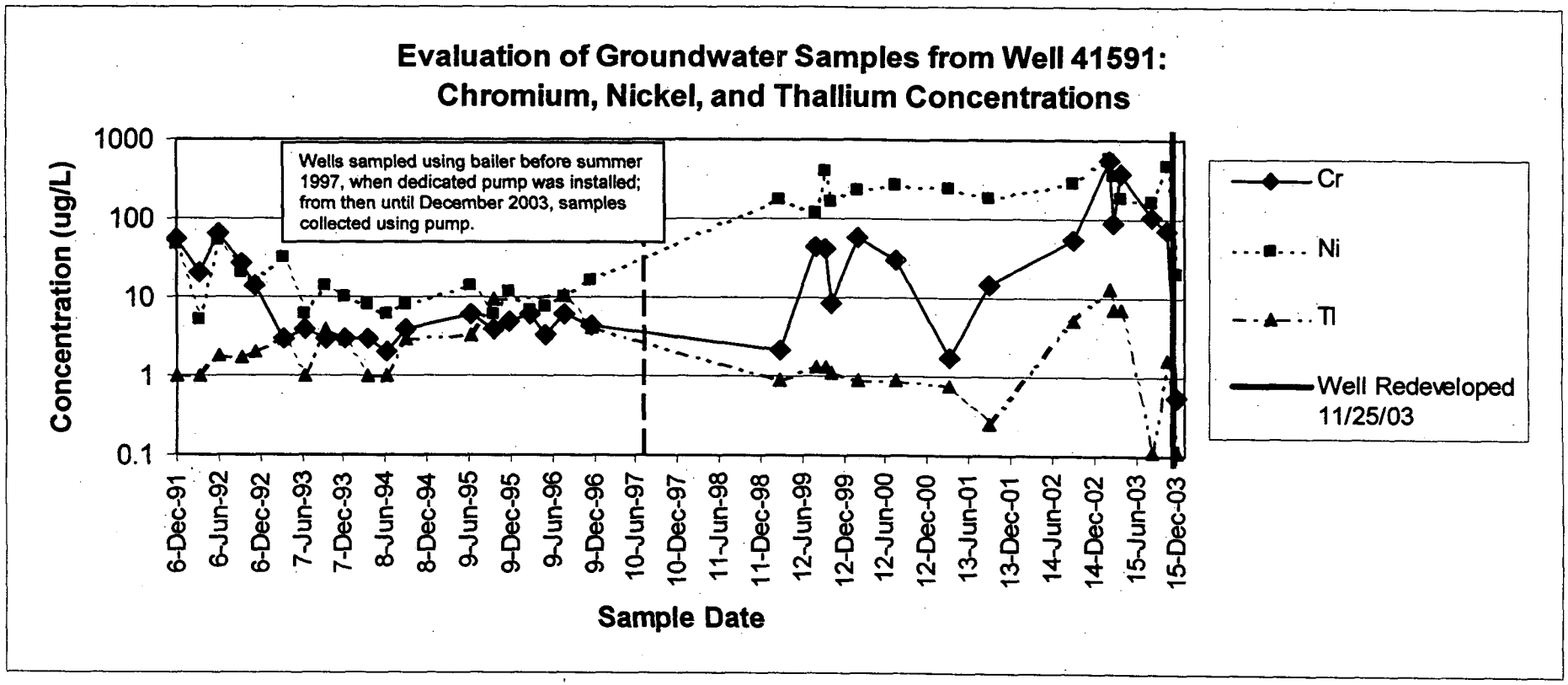
Attachment 1
Location Map
for Well 41591

CLASSIFICATION REVIEW EXEMPTION CEX-105-01

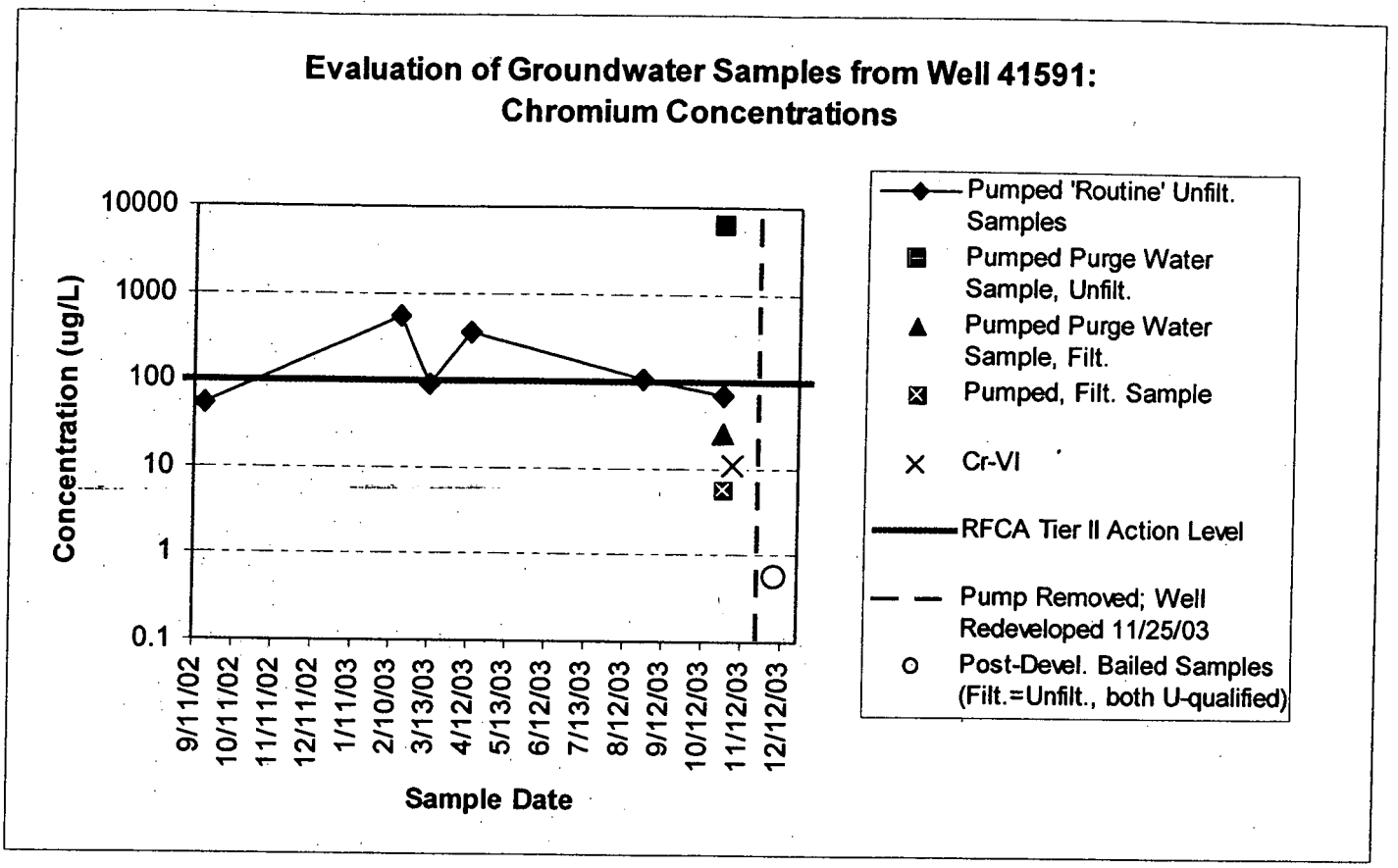
ATTACHMENT 2: TREND PLOTS

The trend plots below summarize concentrations of chromium (Cr), nickel (Ni), and thallium (Tl) in groundwater samples from well 41591. Trend Plot 1 displays these data since the well was first sampled. Trend Plots 2, 3, and 4 focus on data generated immediately prior to and through the evaluation described in Letter No. 03-RF-01729. Note that all results are displayed on a logarithmic concentration scale.

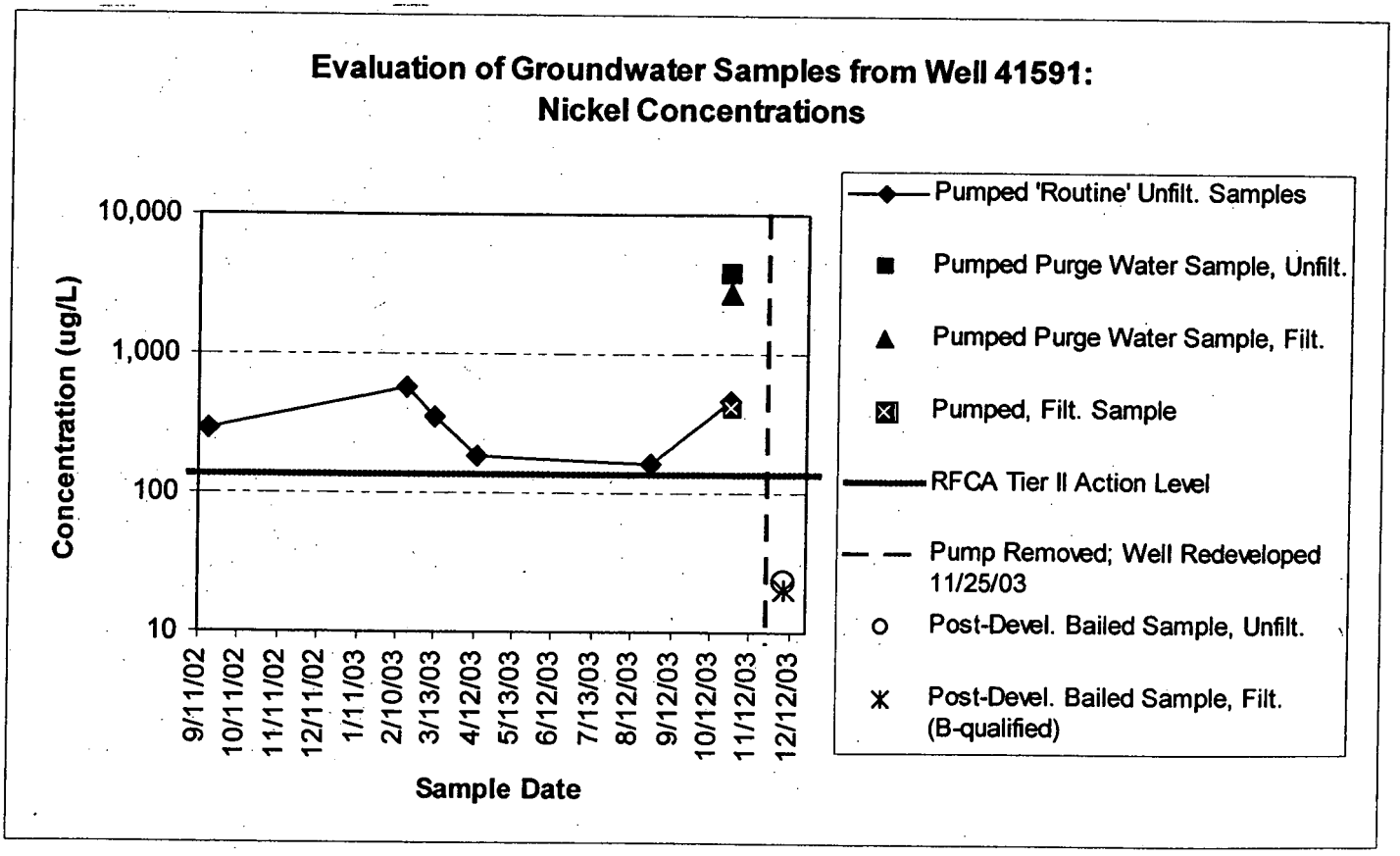
Abbreviations used: Filt. = filtered; Unfilt. = unfiltered; Devel. = well redevelopment.



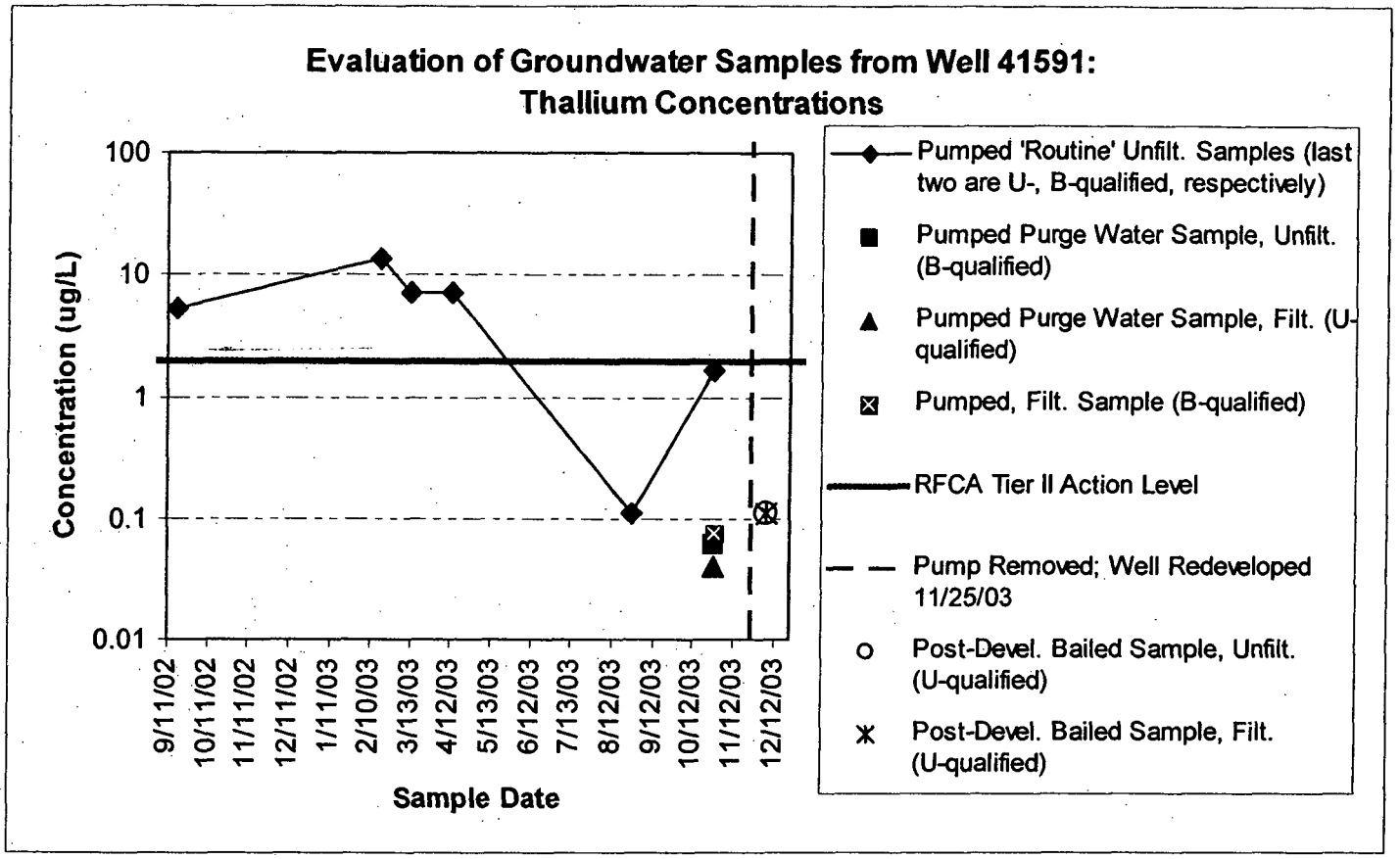
Trend Plot 1.



Trend Plot 2.



Trend Plot 3.


Evaluation of Groundwater Samples from Well 41591:
Thallium Concentrations
Concentration (ug/L)
100
10
1
0.1
0.01
9/11/02
10/11/02
11/11/02
12/11/02
1/11/03
2/10/03
3/13/03
4/12/03
5/13/03
6/12/03
7/13/03
8/12/03
9/12/03
10/12/03
11/12/03
12/12/03
Sample Date
Pumped 'Routine' Unfilt. Samples (last two are U-, B-qualified, respectively)
Pumped Purge Water Sample, Unfilt. (B-qualified)
Pumped Purge Water Sample, Filt. (U-qualified)
Pumped, Filt. Sample (B-qualified)
RFCA Tier II Action Level
Pump Removed; Well Redeveloped 11/25/03
Post-Devel. Bailed Sample, Unfilt. (U-qualified)
Post-Devel. Bailed Sample, Filt. (U-qualified)

Trend Plot 4.

Attachment 3: Analytical Data Summary for Groundwater Samples from Well 41591 for Cr, Ni, and Tl

Sample Date	Analyte	Sample Type Code	Result Type Code	Result	Units	Lab Qualifier	Validation Qualifier	Detection Limit	Dilution Factor	Heat Filtered
12/6/91	CHROMIUM	REAL	TRG	6	UG/L	U	V	10		YES
12/6/91	CHROMIUM	REAL	TRG	55.6	UG/L		V	10		
3/18/92	CHROMIUM	REAL	TRG	5	UG/L	U	V	10		YES
3/18/92	CHROMIUM	REAL	TRG	20.9	UG/L		V	10		
6/10/92	CHROMIUM	REAL	TRG	63.4	UG/L		V	2		
6/10/92	CHROMIUM	REAL	TRG	2	UG/L	U	V	2		YES
9/15/92	CHROMIUM	REAL	TRG	5.6	UG/L	U	V	5.6		YES
9/15/92	CHROMIUM	REAL	TRG	27.5	UG/L		V	2.4		
11/17/92	CHROMIUM	REAL	TRG	3	UG/L	U	V	10		YES
11/17/92	CHROMIUM	REAL	TRG	13.8	UG/L		J	10		
3/22/93	CHROMIUM	REAL	TRG	3	UG/L	U	V	5		YES
6/22/93	CHROMIUM	REAL	TRG	4	UG/L	U	V	10		YES
9/20/93	CHROMIUM	REAL	TR1	3	UG/L	U	V	3		YES
12/8/93	CHROMIUM	REAL	TR1	3	UG/L	U	V	3		YES
3/25/94	CHROMIUM	REAL	TRG	3	UG/L	U	V	10		YES
6/15/94	CHROMIUM	REAL	TRG	2	UG/L	U	V	10		YES
9/7/94	CHROMIUM	REAL	TR1	4	UG/L	U	V	4		YES
6/14/95	CHROMIUM	REAL	TR1	6.2	UG/L	B	V	10	1	NO
6/14/95	CHROMIUM	REAL	TR1	2.8	UG/L	U	V	10	1	YES
9/25/95	CHROMIUM	REAL	TR1	4	UG/L	U	V	10		YES
9/25/95	CHROMIUM	REAL	TR1	4	UG/L	U	V	10		NO
12/6/95	CHROMIUM	REAL	TR1	5	UG/L	U	Y	10		YES
2/29/96	CHROMIUM	REAL	TR1	6	UG/L	U	Y	5.2		YES
5/9/96	CHROMIUM	REAL	TR1	3.3	UG/L	U	Y	10		YES
7/30/96	CHROMIUM	REAL	TR1	6.1	UG/L	U	V	6.1		YES
11/25/96	CHROMIUM	REAL	TR1	4.3	UG/L	U	Y	10		YES
3/3/99	CHROMIUM	DUP	TR1	2.1	UG/L		UJ1	0.15	1	
3/3/99	CHROMIUM	REAL	TR1	1.8	UG/L	B	UJ1	0.15	1	
8/12/99	CHROMIUM	DUP	TR1	43.3	UG/L		V	0.2	1	NO
8/12/99	CHROMIUM	REAL	TR1	33.2	UG/L		V	0.2	1	NO
9/23/99	CHROMIUM	REAL	TR1	41.9	UG/L		V1	0.2	1	NO
10/19/99	CHROMIUM	REAL	TR1	8.6	UG/L		V	0.18	1	
2/16/00	CHROMIUM	DUP	TR1	59.1	UG/L		V	0.15	1	
2/16/00	CHROMIUM	REAL	TR1	52.2	UG/L		V	0.15	1	
7/26/00	CHROMIUM	REAL	TR1	30.2	UG/L	B	V	0.22	1	NO
3/22/01	CHROMIUM	REAL	TR1	1.7	UG/L	B	UJ1	0.22	1	YES
9/10/01	CHROMIUM	REAL	TR1	15	UG/L	U	V1	15	50	YES
9/19/02	CHROMIUM	REAL	TR1	54	UG/L		V	0.38	1	NO
2/18/03	CHROMIUM	REAL	TR1	555	UG/L		J1	10	1	NO
3/13/03	CHROMIUM	REAL	TR1	92	UG/L		V1	0.32	1	NO
4/14/03	CHROMIUM	REAL	TR1	365	UG/L		V1	0.396	1	NO
8/27/03	CHROMIUM	REAL	TR1	104	UG/L		V	0.889	1	NO
10/28/03	CHROMIUM	REAL	TR3	70.2	UG/L		V1	1.46	5	NO
10/28/03	CHROMIUM	REAL	TR3	5.8	UG/L	B	J1	1.46	5	YES
10/28/03	CHROMIUM	REAL	TR3	6150	UG/L		V1	1.46	5	NO
10/28/03	CHROMIUM	REAL	TR3	25.7	UG/L		V1	1.46	5	YES
12/8/03	CHROMIUM	REAL	TR1	0.56	UG/L	U	V1	0.556	1	YES

Sample Date	Analyte	Sample Type Code	Result Type Code	Result	Units	Lab Qualifier	Validator Qualifier	Detection Limit	Dilution Factor	Field Filtered
12/8/03	CHROMIUM	REAL	TR1	0.56	UG/L	U	V1	0.556	1	NO
11/4/03	CHROMIUM VI	REAL	TR1	0.011	MG/L		V	0.0038	1	NO
12/6/91	NICKEL	REAL	TRG	17	UG/L	U	V	40		YES
12/6/91	NICKEL	REAL	TRG	45.7	UG/L		V	40		
3/18/92	NICKEL	REAL	TRG	5.2	UG/L	B	J	40		YES
3/18/92	NICKEL	REAL	TRG	17	UG/L	BE	J	40		
6/10/92	NICKEL	REAL	TRG	11.2	UG/L	U	V	11.2		YES
6/10/92	NICKEL	REAL	TRG	52.1	UG/L	U	J	11.2		
9/15/92	NICKEL	REAL	TRG	6.1	UG/L	U	V	6.1		YES
9/15/92	NICKEL	REAL	TRG	19.9	UG/L		V	19.3		
11/17/92	NICKEL	REAL	TRG	13	UG/L	U	V	40		YES
11/17/92	NICKEL	REAL	TRG	14.3	UG/L	U	J	40		
3/22/93	NICKEL	REAL	TRG	31	UG/L	U	V	11		YES
6/22/93	NICKEL	REAL	TRG	6	UG/L	U	V	40		YES
9/20/93	NICKEL	REAL	TR1	14	UG/L	U	V	14		YES
12/8/93	NICKEL	REAL	TR1	10	UG/L	U	V	10		YES
3/25/94	NICKEL	REAL	TRG	8	UG/L	U	V	40		YES
6/15/94	NICKEL	REAL	TRG	6	UG/L	U	V	40		YES
9/7/94	NICKEL	REAL	TR1	8	UG/L	U	V	8		YES
6/14/95	NICKEL	REAL	TR1	15.2	UG/L	B	V	40	1	NO
6/14/95	NICKEL	REAL	TR1	14.2	UG/L	U	V	40	1	YES
9/25/95	NICKEL	REAL	TR1	6	UG/L	U	V	40		NO
9/25/95	NICKEL	REAL	TR1	6	UG/L	U	V	40		YES
12/6/95	NICKEL	REAL	TR1	11.7	UG/L	J	Y	40		YES
2/29/96	NICKEL	REAL	TR1	7	UG/L	U	Y	6.5		YES
5/9/96	NICKEL	REAL	TR1	7.8	UG/L	U	Y	40		YES
7/30/96	NICKEL	REAL	TR1	10.2	UG/L	U	V	10.2		YES
11/25/96	NICKEL	REAL	TR1	16.2	UG/L	U	Y	40		YES
3/3/99	NICKEL	DUP	TR1	165	UG/L		V1	0.28	1	
3/3/99	NICKEL	REAL	TR1	174	UG/L		V1	0.28	1	
8/12/99	NICKEL	DUP	TR1	117	UG/L		V	0.3	1	NO
8/12/99	NICKEL	REAL	TR1	108	UG/L		V	0.3	1	NO
9/23/99	NICKEL	REAL	TR1	394	UG/L	B	V1	0.3	1	NO
10/19/99	NICKEL	REAL	TR1	163	UG/L		V	0.25	1	
2/16/00	NICKEL	DUP	TR1	159	UG/L		V	0.35	1	
2/16/00	NICKEL	REAL	TR1	229	UG/L		V	0.35	1	
7/26/00	NICKEL	REAL	TR1	273	UG/L	B	V	0.3	1	NO
3/22/01	NICKEL	REAL	TR1	238	UG/L		V1	0.3	1	YES
9/10/01	NICKEL	REAL	TR1	180	UG/L		V1	1	1	YES
9/19/02	NICKEL	REAL	TR1	290	UG/L		V	0.8	1	NO
2/18/03	NICKEL	REAL	TR1	570	UG/L		J1	40	1	NO
3/13/03	NICKEL	REAL	TR1	360	UG/L		V1	0.55	1	NO
4/14/03	NICKEL	REAL	TR1	186	UG/L		V1	0.196	1	NO
8/27/03	NICKEL	REAL	TR1	164	UG/L		V	0.889	1	NO
10/28/03	NICKEL	REAL	TR3	458	UG/L		V1	0.205	5	NO
10/28/03	NICKEL	REAL	TR3	418	UG/L		V1	0.205	5	YES
10/28/03	NICKEL	REAL	TR3	3740	UG/L		V1	0.205	5	NO
10/28/03	NICKEL	REAL	TR3	2700	UG/L		V1	0.205	5	YES
12/8/03	NICKEL	REAL	TR1	20.5	UG/L	B	V1	0.889	1	YES
12/8/03	NICKEL	REAL	TR1	23.4	UG/L		V1	0.889	1	NO
12/6/91	THALLIUM	REAL	TRG	1	UG/L	U	V	10		YES
12/6/91	THALLIUM	REAL	TRG	1	UG/L	U	V	10		
3/18/92	THALLIUM	REAL	TRG	1	UG/L	UW	J	10		YES

Sample Date	Analyte	Sample Type Code	Result Type Code	Result	Units	Lab Qualifier	Validation Qualifier	Detection Limit	Dilution Factor	Final Filtered?
3/18/92	THALLIUM	REAL	TRG	1	UG/L	UWN	J	10		
6/10/92	THALLIUM	REAL	TRG	1.8	UG/L	U	J	1.8		YES
6/10/92	THALLIUM	REAL	TRG	1.8	UG/L	U	J	1.8		
9/15/92	THALLIUM	REAL	TRG	1.3	UG/L	U	V	1.3		YES
9/15/92	THALLIUM	REAL	TRG	1.7	UG/L	U	V	1.7		
11/17/92	THALLIUM	REAL	TRG	2	UG/L	U	V	10		YES
11/17/92	THALLIUM	REAL	TRG	2	UG/L	U	V	10		
3/22/93	THALLIUM	REAL	TRG	3	UG/L	UW	J	2		YES
6/22/93	THALLIUM	REAL	TRG	1	UG/L	U	V	10		YES
9/20/93	THALLIUM	REAL	TR1	4	UG/L	UW	J	4		YES
12/8/93	THALLIUM	REAL	TR1	3	UG/L	U	V	3		YES
3/25/94	THALLIUM	REAL	TRG	1	UG/L	U	V	10		YES
6/15/94	THALLIUM	REAL	TRG	1	UG/L	U	V	10		YES
9/7/94	THALLIUM	REAL	TR1	3	UG/L	U	V	3		YES
6/14/95	THALLIUM	REAL	TR1	3.3	UG/L	U	V	10	1	NO
6/14/95	THALLIUM	REAL	TR1	3.3	UG/L	U	V	10	1	YES
9/25/95	THALLIUM	REAL	TR1	7.5	UG/L	J	V	10		NO
9/25/95	THALLIUM	REAL	TR1	9.4	UG/L	J	V	10		YES
7/30/96	THALLIUM	REAL	TR1	10.8	UG/L	*	J	10		YES
11/25/96	THALLIUM	REAL	TR1	4.2	UG/L	U	Y	10		YES
3/3/99	THALLIUM	DUP	TR1	0.92	UG/L	U	V1	0.92	1	
3/3/99	THALLIUM	REAL	TR1	0.92	UG/L	U	V1	0.92	1	
8/12/99	THALLIUM	DUP	TR1	1.3	UG/L	U	V	1.3	1	NO
8/12/99	THALLIUM	REAL	TR1	1.3	UG/L	U	V	1.3	1	NO
9/23/99	THALLIUM	REAL	TR1	1.3	UG/L	U	V1	1.3	1	NO
10/19/99	THALLIUM	REAL	TR1	1.1	UG/L	U	V	1.1	1	
2/16/00	THALLIUM	DUP	TR1	0.92	UG/L	U	V	0.92	1	
2/16/00	THALLIUM	REAL	TR1	0.92	UG/L	U	V	0.92	1	
7/26/00	THALLIUM	REAL	TR1	0.9	UG/L	U	V	0.9	1	NO
3/22/01	THALLIUM	REAL	TR1	0.75	UG/L	U	V1	0.9	1	YES
9/10/01	THALLIUM	REAL	TR1	0.25	UG/L	U	V1	0.25	5	YES
9/19/02	THALLIUM	REAL	TR1	5.3	UG/L		UJ	2.4	1	NO
2/18/03	THALLIUM	REAL	TR1	13.5	UG/L		J1	10	1	NO
3/13/03	THALLIUM	REAL	TR1	7.2	UG/L		UJ1	3.6	1	NO
4/14/03	THALLIUM	REAL	TR1	7.14	UG/L	N	J1	0.41	1	NO
8/27/03	THALLIUM	REAL	TR1	0.11	UG/L	U	V	0.111	1	NO
10/28/03	THALLIUM	REAL	TR3	1.65	UG/L	B	V1	0.04	5	NO
10/28/03	THALLIUM	REAL	TR3	0.075	UG/L	B	UJ1	0.04	5	YES
10/28/03	THALLIUM	REAL	TR3	0.06	UG/L	B	UJ1	0.04	5	NO
10/28/03	THALLIUM	REAL	TR3	0.04	UG/L	U	V1	0.04	5	YES
12/8/03	THALLIUM	REAL	TR1	0.11	UG/L	U	V1	0.111	1	YES
12/8/03	THALLIUM	REAL	TR1	0.11	UG/L	U	V1	0.111	1	NO